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APPENDIX A – TRAFFIC ANALYSIS SUMMARY

SUMMARY OF ANALYSIS

An operational analysis was conducted along the State Route 126 corridor from Center Street (L.M. 3.72) to the I-81 interchange (L.M. 12.12) for the existing conditions (No Build), the two (2) Build alternatives (Alternative A and Alternative B) described in the State Route 126 Corridor Improvement Project Draft Environmental Impact Statement (DEIS), and a modified version of Alternative B (Preferred Alternative) for the Design Year 2037.

The operational analysis utilized traffic projections provided by TDOT on 11/5/12. The analysis for all segments was conducted using the Highway Capacity Software (HCS) 2010 software. Each alternative was subdivided in smaller segments and analyzed using the assumptions and methodologies presented in the **Analysis Methodology** section. The resulting Level of Service (LOS) for all segments analyzed for each alternative is presented in **Table 1**. A more detailed breakdown of the analysis results and calculations for each alternative can be found in the **Appendix**.

TABLE 1: LEVEL OF SERVICE (LOS) SUMMARY

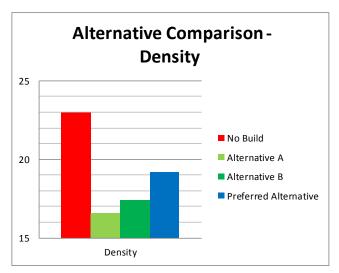
I ABLE 1: I	LEVEL OF S	SERVICE (L	LUS) SUM	WARY	
		Alter	native		
Segment	No Build	Alt A	Alt B	Preferred Alt	Range
	LOS	LOS	LOS	LOS	
1a	В	В	В	В	Center to SR 93
1b	С	В	В	В	SR 93 to Hawthorne
2a	B/B ¹	В	В	В	Hawthorn to Harbor Chapel
2b	A/B ¹	Α	Α	Α	Harbor Chapel to Past Harbor Chapel
3	В	Α	Α	A/A ¹	Past Harbor Chapel to Past Old Stage
4	E	Α	Α	E	Past Old Stage to Lemay
5	Е	Α	Е	Е	Lemay to Cooks Valley
6	Е	Е	Е	Е	Cooks Valley to Island
7	Е	E	Е	Е	Island to Fall Creek
8	Е	Е	Е	E	Fall Creek to Hill
9	Е	Е	Е	E	Hill to Harrtown
10	Е	D	D	D	Harrtown to Carolina Pottery
11	Α	Α	Α	Α	Carolina Pottery to I-81

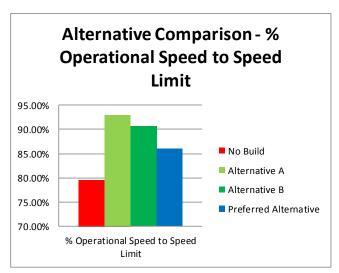
¹Analysis segment geometry is asymmetrical. LOS given for both eastbound and westbound lanes, respectively.

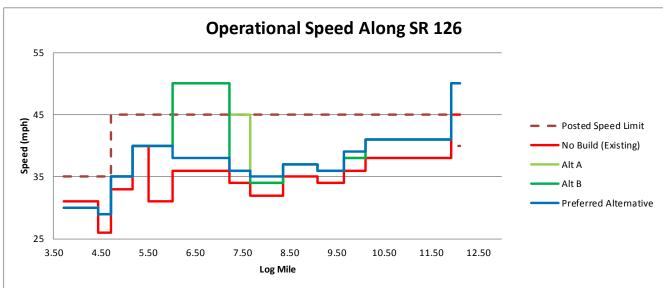
Aside from LOS, the density and operational speed of the analysis segments were used to further compare the alternatives. A side by side comparison of the analysis results can be found in **Figure 1**. The graphs depicting the density and percent operational speed to the speed limit represent overall values and were developed using a weighted average with respect to segment length versus total length of the study corridor. As shown by the comparison, all build alternatives analyzed showed an improvement in both the operational speed and density over that of the No Build during the Design Year.

FIGURE 1: COMPARISON OF ALTERNATIVES

Comparison of Alternatives







ANALYSIS METHODOLOGY

SEGMENT SELECTION

The division between the analysis segments was based on the following:

- Change in roadway typical section
- Change in traffic volume

In some cases, there existed a traffic change where a small portion of the analysis segment would have different volumes. In this instance, the segment was not broken up into smaller pieces and the highest traffic volume along the subject segment was used in the analysis.

TRAFFIC VOLUMES

Projected Average Daily Traffic (ADT) and Percent Trucks along State Route 126 for 2017 and 2037 were provided by TDOT's Project Planning Division. The Design Hourly Volume (DHV) and directional splits for the analysis were calculated using a K factor and Directional Distribution Factor taken from the Tennessee Roadway Information Management System (TRIMS) and confirmed by TDOT.

MODULE SELECTION

The operational analysis along the State Route 126 corridor was conducted using HCS 2010 software. The software uses methodologies set forth by the 2010 Highway Capacity Manual (HCM). The three (3) modules used in the development of the analysis are the following: Streets, Two Lane, and Multilane.

STREETS ANALYSIS

The Streets module was used with segments identified as having interrupted flow conditions. According to the 2010 HCM (page 17-6), a roadway segment with boundary points within two (2) miles of an existing signalized intersection is considered to operate under interrupted flow conditions. Using this criterion, the Streets Module was applied from the beginning of the project through Old Stage Road, which coincides with the current Kingsport City Limits.

Existing lane widths were utilized for the No Build analysis. Lane widths as proposed are used for all Build alternatives. The numbers of access points were estimated by an actual count taken from aerial photography and GIS property information.

Streets Analysis Assumptions:

• The delay due to turning vehicles was developed using HCM 2010 Exhibit 17-13. This exhibit provides a through vehicle delay due to turning vehicles in seconds per vehicle and is dependent on the midsegment traffic volume and number of lanes. A fifty (50) percent adjustment was applied to the delay times due to the presence of a turn lane as recommended in the 2010 HCM page 17-35, paragraph 3.

• As intersection turning movement data was not available, the volume distribution for access point intersections was developed using the suggested proportions of the major roadway's directional volume, as shown in HCM 2010 Exhibit 17-25. The use of actual turning movement counts at minor roadway intersections, if they were available, would have an insignificant effect on the existing level of service and would not be applicable to the design year analysis. Minor roadways through movements were not estimated as they are not needed for the HCM 2010 Streets' automobile analysis.

TWO LANE/MULTILANE ANALYSIS

Segments not meeting the interrupted flow criteria were analyzed with either the Two Lane or Multilane module depending on the typical section of the segment. All segments from Old Stage Road to the end of the project at I-81 were analyzed as uninterrupted flow.

Existing lane widths were utilized for the No Build analysis. Lane widths as proposed in the DEIS were used for all Build alternatives. The numbers of access points were estimated by an actual count taken from aerial photography and GIS property information.

Two Lane Analysis Assumptions:

- Rolling terrain was assumed for all segments.
- The analysis utilized an estimated Base Free Flow Speed (BFFS) for each segment of the build alternatives. For the two lane analysis, the estimated BFFS was calculated using guidance given in the 2010 HCM. As shown in the HCM 2010 Exhibit 15-5, the estimated BFFS of a two lane analysis segment was calculated by adding ten (10) mph to the speed limit of the segment.
 - For the build alternatives, the design speed of the analysis segment was assumed to be the future speed limit for analysis.
 - For the No Build Alternative, the current posted speed was used to develop a BFFS with one exception. The BFFS for the analysis of State Route 126 from Old Stage Road to Carolina Pottery Road was based on a reduction in speed limit request by the Department of Safety in July 2012.
- One hundred (100) percent no passing zone was assumed for all two (2) lane segments with a two way left turn lane based on guidance given in the 2010 HCM page 15-63, paragraph 2.
- The percent no passing zone for two lane segments with no two way left turn lane was determined based on the existing conditions, which is one hundred (100) percent no passing.
- All segments analyzed were classified as Class I and use percent time spent following (PTSF) and operational speed as the MOE for LOS determination. (Class III was considered as an alternative analysis. Further discussion on using Class III Highway in the analysis is provided in the Two Lane Segments Analyzed as a Class III Highway section.)

Multilane Analysis Assumptions:

- Rolling terrain was assumed for all segments.
- For the multilane analysis segments, the estimated BFFS was calculated using guidance given in the 2010 HCM. For multilane analysis segments, the estimated BFFS was estimated by adding seven (7) mph to the speed limit of the segment as suggested in 2010 HCM page 14-11, paragraph 2. For the build alternatives, the design speed of the analysis segment was assumed to be the future speed limit for analysis.

TRAFFIC ANALYSIS

Each alternative was analyzed for the base year (2017) and design year (2037) traffic volumes provided by TDOT using the 2010 Highway Capacity Software and the methodologies discussed in this report. The details of each analysis and its results are tabulated in the following pages as summarized below.

- No-Build Analysis Summary
- No-Build 2017 Analysis Details
- No-Build 2037 Analysis Details
- Preferred Alternative Analysis Summary
- Preferred Alternative 2017 Analysis Details
- Preferred Alternative 2037 Analysis Details
- Build Alternative A Analysis Summary
- Build Alternative A 2017 Analysis Details
- Build Alternative A 2037 Analysis Details
- Build Alternative B Analysis Summary
- Build Alternative B 2017 Analysis Details
- Build Alternative B 2037 Analysis Details

₽		山			č		Speed		2	2017			ľ	2037	
_	L.M	Desc.	L.M.	Desc.	UISI.	Cross section	Limit	AADT	FOS	Speed	Speed Density	AADT	LOS	LOS Speed Density	Density
<u>'a</u>	3.72	Center St.	4.44	4.44 SR 93	0.72	4-Lanes with No Median and Narrow Shoulders	35	14,680	В	32	16.5			31	21.2
16	4.44	SR 93	4.71	Hawthorn e St.	0.27	4-Lanes with a Raised Grass Median and Wide Shoulders	35	16,100	ပ	25	22.6	20,380	O	26	28.5
2a	4.71	Hawthorn e St.	5.18	Harbor Chapel Rd.	0.47	2-Lanes Eastbound, 1- Lane Westbound with No Median and Narrow	45	15,630	В	34	32.9	20,190	В	33	43.4
2b	5.18	Harbor Chapel Rd.	5.52	Past Harbor Chapel	0.34	2-Lanes Eastbound, 1- Lane Westbound with No Median and Narrow	45	10,030	٨	41	17.7	12,980	4	14	22.7
က	5.52	Past Harbor Chapel	6.02	Past Old Stage Rd.	0.5	2-Lanes with TWLTL and Narrow Shoulders	45	10,030	8	32	22.2	12,980	В	31	30.2
4	6.02	Past Old Stage Rd.	7.22		1.2	2-Lanes with No Median and Narrow Shoulders	45	7,680	ш	38	17.4	10,370	ш	36	23.7
5	7.22	Lemay Rd.	7.66	Cooks Valley Rd.	0.44	2-Lanes with No Median and Narrow Shoulders	45	7,680	Ш	36	18.5	10,370	ш	34	25.3
9	7.66	Cooks Valley Rd.	8.37	Island Rd.	0.71	2-Lanes with No Median and Narrow Shoulders	45	9,570	ш	34	23.0	12,350	Ш	32	30.9
7	8.37	Island Rd.	9.10	Fall Creek Rd.	0.73	2-Lanes with No Median and Narrow Shoulders	45	7,510	ш	36	18.1	8,410	Ш	35	20.1
8	9.10	Fall Creek Rd.	9.65	9.65 Hill Rd.	0.55	2-Lanes with No Median and Narrow Shoulders	45	8,440	ш	35	20.1	096'6	Ш	34	24.4
6	9.65	Hill Rd.	10.12	10.12 Harrtown Rd.	0.47	2-Lanes with No Median and Narrow Shoulders	45	6,370	ш	36	15.5	7,010	Ш	36	16.8
	10 10.12		11.92	Carolina 11.92 Pottery Rd.	1.8	2-Lanes with No Median and Narrow Shoulders	45	6,870	Ш	39	15.4	086'9	ш	38	15.7
	11.92	Carolina 11 11.92 Pottery Rd.	12.12 -81			4-Lanes with a Raised Grass Median and Wide Shoulders		6,870	4	45	9.9	6,980	4	45	6.7
				= 3	8.4	Weighted Average =	44			36	18.6			35	23.0

2017 No-Build LOS Calculation Data

Т	≥		-						T	1	1			
ysis	Density	п/а	n/a	n/a	n/a	n/a	17.4	18.5	23.0	18.1	20.1	15.5	15.4	11/3
ne Anal	PTSF	в/ш	11/8	n/a	в/и	n/a	78.2	78.2	81.7	78.2	80.1	72.6	75.7	n/a
For I wo-Lane Analysis	Speed	e/u	17/8	n/a	D/8	2/2	37.7	35.5	34.2	35.6	35.0	36.3	38.5	n/a
ב	Rate	n/a	1/2	n/a	11/8	n/a	656	656	786	644	705	564	594	п/а
SIS	Density	n/a	11/2	n/a	n/a	D/a	nía	n/a	n/a	5/2 27	e/u	n/a	n/a	6.6
ne Anaiy	Speed	n/a	11/2	n/a	e/u	п/а	n/a	n/a	10/3	n/a	11/3	n/a	e/u	45
ror Multi-Lane Analysis	Speed	e/u	n/a	n/a	6/4	n/a	n/a	13/3	11/8	p/u	n/a	E/U	6/4	2
I VI	-	e e	11/3	D/0	m/a	n/a	8/6	2/3	13/23	8/6	6/6	n/a	13/8	296
	Density	16.5	22.6	32.9	17.7	22.2	n/a	8/12	n/a	3/0	n/a	1/8	n/a	6/4
ol offeets Arialysis	PFFS	77.3	62.2	74.23	87.12	71.41	n/a	n/a	B/u	n/a	n/a	n/a	n/a	n/a
Ollegia	Speed	31.9	25.4	34	40.73	32.48	11/21	n/a	e/u	n/a	e/u	11/3	18/2	n/a
	Rate	1050	1150	1120	720	720	11/2	7,73	1/8	n/a	n/a	6	1/2	n/a
Access	Points	9/9	4/5	9/9	0/0	3/2	6/4	24	24	24	24	24	4	5/15
% No		n/a	n/a	n/a	n/a	n/a	n/a	100	100	100	100	100	100	n/a
Shoulder		-	80	2	2	2	2	2	2	2	2	2	2	12
	% Luck	3%	3%	3%	4%	4%	%9	%9	%9	%9	%9	%9	%9	%9
	VHUU	1050	1150	1120	720	720	550	550	089	540	009	460	490	490
2-Way	DHV	1610	1770	1720	1100	1100	840	840	1050	830	930	700	760	760
_	۵	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65
7	۷ ا	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
TOAA	5	14680	16100	15630	10030	10030	7680	7680	9570	7510	8440	6370	6870	0289
	-	<u>a</u>	9	Za	2b ,	ω	4	2	9	7	ω	6	10	

2037 No-Build LOS Calculation Data

				2 Max							For Street	For Streets Analysis		For	Multi-Lar	For Multi-Lane Analysis	is	For	For Two-Lane Analysis	e Analys	isi
₽	AADT	~	۵	DHV	VHQQ	Truck %	Width	% No Passing	Access	Rate	Speed	PFFS	Density	Flow Rate (Calc)	Diff Speed	Speed	Density	Flow Rate (Calc)	Speed	PTSF	Density
<u>m</u>	18,580	0.11	0.65	2040	1330	3%	-	n/a	9/9	1330	31.4	75.9	21.2	e/u	ayu		n/a	n/a	.02	L	11/3
100	20,380	0.11	0.65	2240	1460	3%	80	п/а	4/5	1460	25.65	63	28.5	6/4	2/8	n/a	B/U	n/a	2/2	1/2	n/a
2a	20,190	0.11	0.65	2220	1440	3%	2	n/a	9/9	1440	33.2	72.6	43.4	n/a	200	11/8	nla	7/8	8/4	8/0	10/21
2b	12,980	0.11	0.65	1430	930	4%	2	n/a	0/0	930	41	7.78	22.7	D/a	n/a	n/a	11/8	e/u	6/11	e/u	e/u
т	12,980	0.11	0.65	1430	930	4%	2	n/a	3/2	930	30.8	67.8	30.2	n/a	17/3	n/a	n/a	11/8	25	n/a	6/11
4	10,370	0.11	0.65	1140	740	%9	2	n/a	6/4	6/4	nía	n/a	n/a	n/a	n/a	6/11	n/a	850	35.9	84.5	23.7
2	10,370	0.11	0.65	1140	740	%9	8	100	24	n/a	8/11	e/u	n/a	11/3	n/a	n/a	n/a	850	33.6	84.5	25.3
9	12,350	0.11	0.65	1360	880	%9	2	100	24	1/3	wa	n/a	nía	n/a	9/8	е/и	e/u	966	32.2	88.0	30.9
7	8,410	0.11	0.65	930	009	%9	2	100	24	n/a	n/a	n/a	3/8	п/а	11/3	n/a	2/2	705	35.0	80.1	20.1
8	096'6	0.11	0.65	1100	720	%9	2	100	24	e,c	6/11	n/a	8/4	n/a	2/2	11/8	6/0	827	33.9	83.5	24.4
6	7,010	0.11	0.65	770	200	%9	5	100	24	n/a	e/u	n/a	6/11	n/a	1/8	11/3	11/8	603	35.9	75.9	16.8
9	6,980	0.11	0.65	770	200	%9	2	100	14	6/0	n/a	8/4	n/a	n/a	876	nfa	11/8	603	38.4	75.9	15.7
1	086'9	0.11	0.65	770	200	%9	12	n/a	5/15	n/a	11/3	n/a	n/a	302	2	45	6.7	11/8	n/a	B/U	e/u

Preferred Alternative LOS

Г	T>		1		T			T	1				T	Т
	Density		25.3	20.6	11.7	22.1	23.5	28.6	19.0	22.7	15.7	14.7	0.9	19.2
2037	Speed	30	29	35	40	88	36	35	37	36	39	4	50	37
2	FOS	В	ω	В	<	Ш	Ш	Ш	Ш	Ш	Ш	۵	<	1
	AADT	18,580	20,380	20,190	12,980	10,370	10,370	12,350	8,410	9,960	7,010	6,980	6,980	
	Density	17.2	19.4	15.8	9.0	16.3	17.2	21.4	17.0	18.8	14.5	14.5	5.9	15.7
2017	Speed	31	30	35	40	40	38	37	38	38	39	41	20	38
2	LOS	Ф	В	4	∢	٥	ш	ш	ш	Ш	ш	۵	4	
	AADT	14,680	16,100	15,630	10,030	7,680	7,680	9,570	7,510	8,440	6,370	6,870	6,870	
Speed	Limit	35	35	35	45	45	45	45	45	45	45	45	45	43
Cross Section	Closs Section	4-Lanes with a Raised Grass Median and 4 Ft. Shoulders	4-Lanes with a Raised Grass Median and 4 Ft. Shoulders	4-Lanes with a TWLTL and 4 Ft. Shoulders	2-Lanes w/ EB Truck Climbing Lane and 10 Ft. Shoulders	2-Lanes with a TWLTL and 6 Ft. Shoulders	2-Lanes with a TWLTL and 6 Ft. Shoulders	2-Lanes with a TWLTL and 6 Ft. Shoulders	2-Lanes with a TWLTL and 6 Ft. Shoulders	2-Lanes with a TWLTL and 6 Ft. Shoulders	2-Lanes with a TWLTL and 6 Ft. Shoulders	2-Lanes with No Median and 10 Ft. Shoulders	4-Lanes with a Raised Grass Median and 12 Ft. Shoulders	Weighted Average =
) jej	1 2	0.72	0.27	0.47	0.84	1.2	0.44	0.71	0.73	0.55	0.47	1.8	0.2	8.40
To	Desc.	SR 93	Haw- thorne St.	Harbor Chapel Rd.	Past Old Stage Rd.	Past Lemay Rd.	Cooks Valley Rd.	Island Rd.	Fall Creek Rd.	Hill Rd.	Harrtown Rd.	Carolina Pottery Rd.	-81	Ξ Ζ
	Ξ.	4.44	4.71	5.18	6.02	7.22	7.66	8.37	9.10	9.65	10.12	11.92	12.12 -81	
From	Desc.	Center St.	SR 93	Haw- thorne St.	Harbor Chapel Rd.	Past Old Stage Rd.	Past Lemay Rd.	Cooks Valley Rd.	Island Rd.	Fall Creek Rd.	Hill Rd.	Harrtown Rd.	Carolina Pottery Rd.	
	Ë.	3.72	4.44	4.71	5.18	6.02	7.22	7.66	8.37	9.10	9.65	10.12	11.92	
╗	1	<u>a</u>	16	2	က	4	ည	9	2	∞	თ	10	7	

2017 Preferred Alternative Calculation Data

	_ ≥		_	1	T			1		1	1		T
lysis	Density	e d	B/L	n/a	10/8	16.3	17.2	21.4	17.0	18.8	14.5	14.5	n/a
ne Ana	PTSF	8/0	n/a	n/a	n/a	78.2	78.2	81.7	78.2	80.1	72.6	75.7	17/3
For Two-Lane Analysis	Speed	e/u	n/a	e/u	11/3	40.3	38.1	36.8	37.8	37.6	38.9	41.1	10/13
2	Flow Rate	n/a	n/a	n/a	11/8	959	656	786	644	705	564	594	n/a
Sis	Density	n/a	n/a	n/a	n/a	, C	n/a	n/a	17/8	n/a	n/a	n/a	5.9
For Multi-Lane Analysis	Speed	п/а	n/a	n/a	n/a	11/a	n/a	n/a	E/U	n/a	n/a	n/a	50
Multi-La	Diff Speed	n/a	п/а	n/a	n/a	D/2	11/3	n/a	n/a	в/ш	11/3	11/3	2
P	Flow Rate	n/a	в/и	n/a	11/3	11/3	6/11	11/3	e/u	n/a	1/2	в/и	296
	Density	17.2	19.4	15.8	0.6	11/a	17/3	e/u	13/8	n/a	1/2	e/u	n/a
roi oileets Ariaiysis	PFFS	78.4	78.5	85.9	86.4	17/3	n/a	11/8	n/a	11/3	E/u	n/a	п/а
Sileers	Speed	30.5	29.6	35.4	39.9	n/a	n/a	n/a	e/u	n/a	n/8	B//9	n/a
	Rate	1050	1150	1120	720	n/a	n/a	5/2	ιVa	2/2	n/a	m/a	11/3
	Access Points	8/8	4/3	2/1	1/0	15	24	24	24	24	24	4	5/15
H	% No Passing	n/a	n/a	n/a	n/a	n/a	100	100	100	100	100	100	n/a
pholippi	Width	4	4	4	9	9	9	9	9	9	9	10	12
_	Truck %	3%	3%	3%	4%	%9	%9	%9	%9	%9	%9	%9	%9
1	VHQQ	1050	1150	1120	720	550	550	089	540	009	460	490	490
2-Wav	DHV	1610	1770	1720	1100	840	840	1050	830	930	700	760	760
	۵	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65
	~	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
	AADT	14,680	16,100	15,630	10,030	7,680	7,680	9,570	7,510	8,440	6,370	6,870	6,870
H	<u> </u>	1a	16 1	2		4	22	9		80	6	10 (

2037 Preferred Alternative LOS Calculation Data

K D CAMPA DDHY Truck % Shoulder Rake Speed PFFS Derivity Cablo Speed Speed Derivity Cablo Speed Speed Derivity Cablo Speed Speed Derivity Cablo Speed Speed Derivity Cablo Speed Speed Derivity Cablo Speed Speed					747.0							ror street	ror streets Analysis		For	Multi-Lar	For Multi-Lane Analysis	sis	For	For Two-Lane Analysis	ve Analy	Sis
19,580 0.11 0.65 2240 1390 3% 4 n/a 8/8 1390 29.7 76.5 22.4 n/a n/a 20,380 0.11 0.65 2240 1460 3% 4 n/a 4/3 1460 26.8 76.4 25.3 n/a n/a n/a 120 36.9 64.8 76.4 25.3 n/a n/a n/a 1460 36.9 64.8 76.4 25.3 n/a n/a n/a 1460 36.9 64.8 76.4 26.9 146 1460 36.9 64.8 66.9 146 1460 36.9 68.6 117 1440 36.9 68.6 117 1440 36.9 68.6 117 1440 36.9 68.6 117 1440 36.9 68.6 117 1440 36.9 68.6 117 1440 36.9 68.6 117 1440 36.9 68.6 117 1440 36.9 68.6		AADT	Υ	۵	Z-way DHV	DDHV	Truck %	,	% No Passing	Access Points	Rate	Speed	PFFS	Density	Flow Rate (Calc)	Diff	Speed	Density	Flow F (Cal	Speed	PTSF	Density
20,380 0.11 0.65 2240 1460 3% 4 n/a 4/3 1460 28.8 76.4 25.3 n/a n/a n/a 1460 28.8 76.4 25.3 n/a n/a n/a 1460 28.8 76.4 25.3 n/a n/a n/a n/a 1440 34.9 64.8 20.6 n/a n/a n/a 1440 34.9 64.8 20.6 n/a n/a n/a 1440 34.9 64.8 66.0 n/a n/a 1440 34.9 66.6 11.7 n/a	æ	18,580		0.65	2040	1330	3%	4	n/a	8/8	1330	29.7	76.5	22.4	n/a	00	n/a	0/8		1,00		+
20,190 0,11 0,655 2220 1440 3% 4 n/a 2/1 1440 34.9 64.8 20.6 n/a 1/1 1/1 1/1 1/1 1/2 <td>0</td> <td>_</td> <td></td> <td>0.65</td> <td>2240</td> <td>1460</td> <td>3%</td> <td>4</td> <td>n/a</td> <td>4/3</td> <td>1460</td> <td>28.8</td> <td>76.4</td> <td>25.3</td> <td>8/U</td> <td>B/U</td> <td>n/a</td> <td>n/a</td> <td>6/0</td> <td>s/s</td> <td>8/0</td> <td>a,c</td>	0	_		0.65	2240	1460	3%	4	n/a	4/3	1460	28.8	76.4	25.3	8/U	B/U	n/a	n/a	6/0	s/s	8/0	a,c
10,370 0.11 0.65 1430 930 4% 10 n/a 1/0 930 39,6 85,6 11.7 n/a		20,190	_	0.65	2220	1440	3%	4	п/а	2/1	1440	34.9	84.8	20.6	e/u	n/a	n/a	B/u	n/8	11/8	9,0	n/a
10,370 0.11 0.65 1140 740 6% 6 n/a 15 n a n/a n/a </td <td></td> <td>12,980</td> <td></td> <td>0.65</td> <td>1430</td> <td>930</td> <td>4%</td> <td>10</td> <td>n/a</td> <td>1/0</td> <td>930</td> <td>39.6</td> <td>85.6</td> <td>11.7</td> <td>e/u</td> <td>of a</td> <td>e/u</td> <td>n/a</td> <td>n/a</td> <td>n/a</td> <td>n/a</td> <td>17/3</td>		12,980		0.65	1430	930	4%	10	n/a	1/0	930	39.6	85.6	11.7	e/u	of a	e/u	n/a	n/a	n/a	n/a	17/3
10,370 0.11 0.65 1140 740 6% 6 100 24 n/a n/a </td <td></td> <td>10,370</td> <td></td> <td>0.65</td> <td>1140</td> <td>740</td> <td>%9</td> <td>9</td> <td>n/a</td> <td>15</td> <td>n/a</td> <td>B/U</td> <td>n/a</td> <td>n/a</td> <td>11/8</td> <td>77/8</td> <td>n/a</td> <td>8/1</td> <td>850</td> <td>38.4</td> <td>84.5</td> <td>22.1</td>		10,370		0.65	1140	740	%9	9	n/a	15	n/a	B/U	n/a	n/a	11/8	77/8	n/a	8/1	850	38.4	84.5	22.1
12,350 0.11 0.65 1360 880 6% 6 100 24 n/8 n/8 </td <td></td> <td>10,370</td> <td></td> <td>0.65</td> <td>1140</td> <td>740</td> <td>%9</td> <td>ø</td> <td>100</td> <td>24</td> <td>6/6</td> <td>n/a</td> <td>e/u</td> <td>e/u</td> <td>6/11</td> <td>8/0</td> <td>n/a</td> <td>17/8</td> <td>850</td> <td>36.2</td> <td>84.5</td> <td>23.5</td>		10,370		0.65	1140	740	%9	ø	100	24	6/6	n/a	e/u	e/u	6/11	8/0	n/a	17/8	850	36.2	84.5	23.5
8,410 0.11 0.65 930 600 6% 6 100 24 n/a		12,350		0.65	1360	880	%9	9	100	24	n/s	2/6	N/3	e/u	n/a	18/4	n/a	n/a	966	34.8	88.0	28.6
9,960 0.11 0.65 1100 720 6% 6 100 24 n/a	7000	8,410	0.11	0.65	930	009	%9	9	100	24	n/a	n/a	n/a	n/a	n/a	n/a	n/a	E/L	705	37.2	80.1	19.0
7,010 0.11 0.65 770 500 6% 6 100 24 N/3 PV3 PV3 <td></td> <td>096'6</td> <td>0.11</td> <td>0.65</td> <td>1100</td> <td>720</td> <td>%9</td> <td>9</td> <td>100</td> <td>24</td> <td>17/3</td> <td>e/u</td> <td>n/a</td> <td>2/3</td> <td>11/8</td> <td>11/0</td> <td>n.a</td> <td>E/(8</td> <td>827</td> <td>36.4</td> <td>83.5</td> <td>22.7</td>		096'6	0.11	0.65	1100	720	%9	9	100	24	17/3	e/u	n/a	2/3	11/8	11/0	n.a	E/(8	827	36.4	83.5	22.7
6,980 0.11 0.65 770 500 6% 10 100 14 n/a		7,010	0.11	0.65	770	200	%9	9	100	24	B/G	e/u	n/a	B/U	11/3	e)u	n/a	n/a	603	38.5	75.9	15.7
6,980 0.11 0.65 770 500 6% 12 n/a 5/15 n/a n/a n/a 302 2 50		6,980	0.11	0.65	770	200	%9	10	100	14	n/a	71/8	n/a	11/3	n/a	N.C.	in C	11/8	603	41.0	75.9	14.7
		6,980	0.11	0.65	770	200	%9	12	n/a	5/15	e/u	n/a	n/a	n/a	302	2	50	6.0	n/a	8/9	e/u	e/u

Build Alternative A LOS

₽	Δ	From	N	To	Dist.	Cross Section	Speed		2(2017			2	2037	
I	E.M.	Desc.	Ľ.M.	Desc.			Limit	AADT	COS	Speed	Speed Density	AADT	SOI	eed	Density
<u>a</u>	3.72	Center St.	4.44	SR 93	0.72	4-Lanes with a Raised Grass Median and 4 Ft. Shoulders	35	14,680	В	31	17.2	18,580	В		22.4
16	4.44	SR 93	4.71	Haw- thorne St.	0.27	4-Lanes with a Raised Grass Median and 4 Ft. Shoulders	35	16,100	В	30	19.4	20,380	В	29	25.3
2	4.71	Haw- thorne St.	5.18	Harbor Chapel Rd.	0.47	4-Lanes with a TWLTL and 4 Ft. Shoulders	35	15,630	4	35	15.8	20,190	В	35	20.6
က	5.18		6.02	Past Old Stage Rd.	0.84	4-Lanes with a Raised Grass Median and 4 Ft. Shoulders	45	10,030	<	14	8.8	12,980	A	40	11.6
4	6.02		7.22	Past Lemay Rd.	1.2	4-Lanes with a Raised Grass Median and 8 Ft. Shoulders	45	7,680	4	50	6.7	10,370	4	50	9.0
D.	7.22	Past Lemay Rd.	7.66	Cooks Valley Rd.	0.44	4-Lanes with a Raised Grass Median and 8 Ft. Shoulders	45	7,680	∢	45	7.4	10,370	4	45	10.0
9	7.66	Cooks Valley Rd.	8.37	Island Rd.	0.71	2-Lanes with a TWLTL and 6 Ft. Shoulders	45	9,570	Ш	37	21.4	12,350	ш	34	29.0
7	8.37	Island Rd.	9.10	Fall Creek Rd.	0.73	2-Lanes with a TWLTL and 6 Ft. Shoulders	45	7,510	ш	38	17.0	8,410	Ш	37	19.0
ω .	9.10	Fall Creek Rd.	9.65	Hill Rd.	0.55	2-Lanes with a TWLTL and 6 Ft. Shoulders	45	8,440	Ш	38	18.8	096'6	Ш	36	23.0
တ	9.65	Hill Rd.	10.12	Harrtown Rd.	0.47	2-Lanes with a TWLTL and 6 Ft. Shoulders	45	6,370	Ш	39	14.5	7,010	Ш	38	15.8
10	10.12	Harrtown Rd.	11.92	Carolina Pottery Rd.	1.8	2-Lanes with No Median and 10 Ft. Shoulders	45	6,870	٥	14	14.5	6,980	۵	14	14.7
7	11.92	Carolina Pottery Rd.	12.12 -81	I-81	0.2	4-Lanes with a Raised Grass Median and 12 Ft. Shoulders	45	6,870	∢	50	5.9	6,980	4	20	6.0
				= 3	8.4	Weighted Average =	43			40	13.77			40	16.6

2017 Build Alternative A LOS Calculation Data

Г	>	4		-				-1				-,	
vsis	Density	_	n/a	n/a	1 g	19	n/a	21.4	17.0	18.8	14.5	14.5	n/a
ne Anal	PTSF	n/a	n/a	17/13	1/8) a	11/3	81.7	78.2	80.1	72.6	75.7	p/u
For Two-Lane Analysis	Speed	n/a	B/U	2/2	2/2	n/a	(E)	36.8	37.8	37.6	38.9	41.1	n/a
<u>8</u>	Flow	n/a	n/a	n/a	e/u	n/a	n/a	786	644	705	564	594	n/a
sis	Density	11/8	n/a	n/a	nla	6.7	7.4	nla	e/u	8	8/11	n/a	5.9
For Multi-Lane Analysis	Speed	n/a	B/N	n/a	n/a	50	45	17/3	n/a	в/и	n/a	N/3	50
Multi-La	Speed	n/a	n/a	e/u	n/a	2	7	n/a	n/a	n/a	11/3	R/8	2
For	Flow Rate	n/a	n/a	B/U	m/L	333	333	11/3	n/a	n/a	l se	1/8	296
	Density	17.2	19.4	15.8	8.8	n/a	n/a	n/a	n/a	n/a	5/3	n/a	n/a
Analysis	PFFS	78.4	78.5	85.9	86.9	n/a	п/а	n/a	n/a	11/9	n/a	11/2	n/a
For Streets Analysis	Speed	30.5	29.6	35.4	41.1	n/a	11/3	n/a	n/a	B/U	n/a	n/a	n/a
P	Rate	1050	1150	1120	720	n/a	n/a	7,43	n/a	n/a	e/u	n/a	e de
	Access Points	8/8	4/3	2/1	1/0	4/1	12/12	24	24	24	24	14	5/15
ŀ	% No Passing	n/a	n/a	n/a	n/a	n/a	n/a	100	100	100	100	100	n/a
:	Shoulder	4	4	4	4	®	- ∞	9	9	ø	9	10	12
	Truck %	3%	3%	3%	4%	%9	%9	%9	%9	%9	%9	%9	%9
	DDHV	1050	1150	1120	720	550	550	089	540	009	460	490	490
2 14/21	Z-way DHV	1610	1770	1720	1100	840	840	1050	830	930	200	760	760
	۵	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65
	~	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
	AADT	14680	16100	15630	10030	7680	7680	9570	7510	8440	6370	6870	6870
\vdash	₽	<u>6</u>	19	2	ъ	4	2	9	2	ω	6	10	1

2037 Build Alternative A LOS Calculation Data

Γ	į.							0	0	C	80		
Sis	Density	+	e/u	n/a	2 2	100	n/a	29.0	19.0	23.0	15.8	14.7	n/a
Je Analy	PTSF		n/a	nfa	n/a	n/a	1/3	88.0	80.1	83.5	75.9	75.9	6/11
For Two-Lane Analysis	Speed	B/III	11/8	11/3	в/п	1/8	n/a	34.4	37.2	36.0	38.1	41.0	17.8
For	Flow Rate (Calc)	28	n/a	n/a	nla	n/a	0/8	966	705	827	603	603	n/8
is	Density	870	11/3	n/a	11/a	6	10	11/8	n/a	n/s	6/0	10/8	6.0
For Multi-Lane Analysis	Speed	D/3	n/a	n/a	n/a	20	45	nia	6/0	n/a	0,0	n/a	50
Aulti-Lan	Diff	11/2	1/3	n/a	n/a	2	7	n/a	n/a	100	2/4	25	2
For A	Flow Rate (Calc)	e/u	8/4	n/a	n/a	448	448	11/3	n/a	n/a	n/a	11/8	302
	Density	22.4	25.3	20.6	11.6	n/a	p/u	55	n/a	n/a	2/9	13/2	11/3
For Streets Analysis	PFFS	76.5	76.4	84.8	85.2	n/a	2/2	n/a	n/a	n/a	n/a	11/8	n/a
For Streets	Speed	29.7	28.8	34.9	40.2	11/8	n/a	2/3	60	20,00	6/4	n/a	n/a
	Rate	1330	1460	1440	930	n/a	n/a	n/a	11/3	n/a	n/a	19/U	n/a
	Access	8/8	4/3	2/1	1/0	4/1	12/12	24	24	24	24	4	5/15
	% No Passing	n/a	n/a	n/a	n/a	n/a	n/a	100	100	100	100	100	n/a
	Shoulder Width	4	4	4	4	ω	80	9	9	9	9	10	12
	Truck %	3%	3%	3%	4%	%9	%9	%9	%9	%9	%9	%9	%9
	DDHV	1330	1460	1440	930	740	740	880	009	720	200	200	200
100	2-way DHV	2040	2240	2220	1430	1140	1140	1360	930	1100	077	077	770
	۵	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65
	ᅩ	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
	AADT	18,580	20,380	20,190	12,980	10,370	10,370	12,350	8,410	096'6	7,010	6,980	086'9
	₽	<u>a</u>	9	8	ю	4	υ.	9	7	8	6	10	Ε

Build Alternative B LOS

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	Densit	22.4	25.3	20.6	11.6	9.0	23.7	29.0	19.0	23.0	15.8	14.7	0.0	17.4
2037	LOS Speed Density	99	29	35	40	20	36	34	37	36	38	14	20	39
2	SOI	В	Ф	В	<	4	Ш	Ш	Ш	ш	Ш	٥	<	
	AADT	18,580	20,380	20,190	12,980	10,370	10,370	12,350	8,410	096'6	7,010	6,980	6,980	
	Speed Density	17.2	19.4	15.8	8.8	6.7	17.2	21.4	17.0	18.8	14.5	14.5	5.9	14.3
2017	Speed	31	30	35	41	20	38	37	38	38	39	14	20	40
2(SOT	В	В	⋖	∢	∢	ш	ш	Ш	Ш	Ш	۵	∢	
	AADT	14,680	16,100	15,630	10,030	7,680	7,680	9,570	7,510	8,440	6,370	6,870	6,870	
Speed	Limit	35	35	35	45	45	45	45	45	45	45	45	45	43
Cross Section	10000000	4-Lanes with a Raised Grass Median and 4 Ft. Shoulders	4-Lanes with a Raised Grass Median and 4 Ft. Shoulders	4-Lanes with a TWLTL and 4 Ft. Shoulders	4-Lanes with a Raised Grass Median and 4 Ft. Shoulders	4-Lanes with a Raised Grass Median and 8 Ft. Shoulders	2-Lanes with a TWLTL and 6 Ft. Shoulders	2-Lanes with a TWLTL and 6 Ft. Shoulders	2-Lanes with a TWLTL and 6 Ft. Shoulders	2-Lanes with a TWLTL and 6 Ft. Shoulders	2-Lanes with a TWLTL and 6 Ft. Shoulders	2-Lanes with No Median and 10 Ft. Shoulders	4-Lanes with a Raised Grass Median and 12 Ft. Shoulders	Weighted Average =
Dist.		0.72	0.27	0.47	0.84	1.2	0.44	0.71	0.73	0.55	0.47	1.8	0.2	8.4
To	Desc.	SR 93	Haw- thorne St.	Harbor Chapel Rd.	Past Old Stage Rd.	Past Lemay Rd.	Cooks Valley Rd.	Island Rd.	Fall Creek Rd.	Hill Rd.	Harrtown Rd.	Carolina Pottery Rd.	1-81	Ξ =
	L.M.	4.44	4.71	5.18	6.02	7.22	7.66	8.37	9.10	9.65	10.12	11.92	12.12	
From	Desc.	Center St.	SR 93	Haw- thorne St.	Harbor Chapel Rd.	Past Old Stage Rd.	Past Lemay Rd.	Cooks Valley Rd.	Island Rd.	Fall Creek Rd.	Hill Rd.	Harrtown Rd.	Carolina Pottery Rd.	
2	L.M.	3.72	4.44	4.71	5.18	6.02	7.22	7.66	8.37	9.10	9.65	10.12	11.92	
₽	1	<u>a</u>	16	7	ო	4	Ω	9	7	- ∞	6	10,	-	

2017 Build Alternative B LOS Calculation Data

7	.≥	1	1			Ī				1		1	
lysis	Density	n/a	7/3	n/a	11/8	(C)	17.2	21.4	17.0	18.8	14.5	14.5	17/3
ine Ana	PTSF	1/3	n/a	n/a	n/a	6/0	78.2	81.7	78.2	80.1	72.6	75.7	8/4
For I wo-Lane Analysis	Speed	n/a	n/a	10/18	n/a	n/a	38.1	36.8	37.8	37.6	38.9	41.1	n/a
2	Flow Rate	n/a	n/a	n/a	n/a	n/a	656	786	644	705	564	594	11/2
SIS	Density	n/a	п/а	n/a	n/a	6.7	1/3	8/0	n/a	n/a	в/и	n/a	5.9
o mun-care Ariarysis	Speed	n/a	n/a	n/a	n/a	20	n/a	n/a	n/a	n/a	11/a	n/a	50
אומווי-במ	Speed	e/u	n/a	n/a	B/U	2	2/2	n/a	12/4	P/9	п/а	n/a	2
5	Flow Rate	n/a	n/a	n/a	n/a	333	n/a	n/a	n/a	n/a	n/a	n/a	296
	Density	17.2	19.4	15.8	8.8	n/a	n/a	n/a	n/a	n/a	n/a	11/3	n/a
Signal and	PFFS	78.4	78.5	85.9	86.9	n/a	n/a	n/a	n/a	n/a	n/a	8/6	n/a
Signal and the signal	Speed	30.5	29.6	35.4	41.1	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Rate	1050	1150	1120	720	7/8	E/u	2/20	n/a	1/8	8/2	n/a	n/a
Acces	Points	25	25	16	16	80	8						80
No Wo	Passing	n/a	n/a	n/a	n/a	100	40						n/a
Shoulder	Width	4	4	4	80	9	10						12
	Truck %	3%	3%	3%	4%	%9	%9	%9	%9	%9	%9	%9	%9
	DDHV	1050	1150	1120	720	550	550						490
2-Way	DHV	1610	1770	1720	1100	840	840						760
c		0.65	0.65	0.65	0.65	0.65	0.65						0.65
2	۷	0.11	0.11	0.11	0.11	0.11	0.11						0.11
FCVV	- A	14,680	16,100	15,630	10,030	7,680	7,680						6,870
2	-	<u>ta</u>	9	7	_ر	4	22	9	7	ω	6	10	

2037 Build Alternative B LOS Calculation Data

	Density	e/u	p/u	n/a	n/a	n/a	23.7	29.0	19.0	23.0	15.8	14.7	
Analysis	PTSF D	+	8/12	17/8	60	n/a	84.5	88.0	80.1	83.5	75.9	75.9	
For Two-Lane Analysis	Speed	_	P/a	n/a	E/G	D/G	35.8	34.4	37.2	36.0	38.1	41.0	
	Flow Rate (Calc)		(C)	B) C	6/4	e/L	850	966	705	827	603	603	
is	ensity	178	n/a	n/a	8/8	0	2/2	n/a	n/a	17/3	11/3	n/a	
For Multi-Lane Analysis	Speed	n/a	n/a	n/a	n/a	50	n/a	11/a	n/a	n/a	n/a	n/a	
Multi-Lan	Diff	10	11/8	n/a	e/u	2	n/a	ala	n/a	nla	n/a	n/a	
For	Flow Rate (Calc)	n/a	6/0	e/u	n/a	448	n/a	6/11	n/a	n/a	n/a	19/9	
	Density	22.4	25.3	20.6	11.6	11/8	n/a	0/0	n/a	n/a	D/8	1/2	
Analysis	PFFS	76.5	76.4	84.8	85.2	11/8	n/a	(a) [n/a	n/a	1/9	n/a	
For Streets Analysis	Speed	29.7	28.8	34.9	40.2	n/a	als.	n/a	1/2	B/U	26	11/3	
	Rate	1330	1460	1440	930	6/4	P)/8	17/3	1/3	6/0	2/8	n/a	
	Access	8/8	4/3	2/1	1/0	4/1	24	24	24	24	24	14	
	% No Passing	n/a	n/a	n/a	n/a	n/a	100	100	100	100	100	100	
	Shoulder	4	4	4	4	ω	9	9	9	9	9	0	,
	Truck %	3%	3%	3%	4%	%9	%9	%9	%9	%9	%9	%9	30
	DDHV	1330	1460	1440	930	740	740	880	009	720	200	200	0
741.0	Z-way DHV	2040	2240	2220	1430	1140	1140	1360	930	1100	077	077	110
	۵	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	L
	×	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	7
	AADT	18,580	20,380	20,190	12,980	10,370	10,370	12,350	8,410	096'6	7,010	086'9	0
F	₽	<u>a</u>	45	2	е п	4	2	9	7	8	თ	9	7

